**Instructor:** Kris Kissel  
**Email:** kkissel@greenriver.edu  
**Phone:** (253) 833 - 9111 Ext. 4506  
**Office:** SMT 331  
**Office Hours:** Daily 10:00-10:50 a.m., or by appointment

**Class Meeting Time:** Daily 11:00-11:50 a.m.  
**Class Meeting Place:** SMT-220  
**Textbook:** *A First Course in Differential Equations 9th Edition*, by Dennis G. Zill (REQUIRED)

**Class Web Site:** www.instruction.greenriver.edu/kkissel/238fall2009  
**WAMAP Web Site:** www.wamap.org  
**WAMAP Course ID:** 1723  
**WAMAP Enrollment Key:** diffeq

**Exams:**  
Friday, October 16 (Midterm Exam #1)  
Friday, November 13 (Midterm Exam#2)  
Thursday, December 10 (Final Exam)

**Holidays:**  
Monday, October 19 (Faculty In-Service Day)  
Tuesday, November 3 (Advising Day)  
Wednesday, November 11 (Veterans' Day)  
Thursday-Friday, November 26-27 (Thanksgiving)  
Monday, December 7 (Study Day)

**Prerequisite:** Math 224 with a grade of 2.0 or higher, or appropriate placement, or instructor's permission.

**Calculator:** A graphing calculator is required for this course.
Course Description

Study of the theory and solutions of first and second order differential equations, existence and uniqueness theorems, numerical methods of solution, and applications. Additional topics may be chosen from the following: (1) series solutions for differential equations, (2) systems of linear differential equations, (3) LaPlace transforms, (4) stability theory. Graphing calculator required. Satisfies a quantitative skills or natural science requirement for AA degree.

Email

Email is the best way to contact me outside of class. I won’t necessarily be able to answer a detailed math question in writing, though it is a good way to set up an appointment if you need to see me but cannot make it to my office hour.

Green River Community College has provided email accounts for all students, with addresses that end with @mail.greenriver.edu. (Incidentally, having such an address will allow you to receive special offers, for example on software prices, which are only available to students.)

You must activate this account if you have not already done so. I will send messages to these accounts during the quarter, and you will be responsible for any information sent to yours. You must therefore either read that account regularly, or set up automatic forwarding to an account that you do read regularly. The website where you can set-up and start using your GRCC email is: http://www.greenriver.edu/studentemail

Calculator

A graphing calculator is required for this course. I will be using a TI-84 calculator for class demonstrations. I recommend a TI-83, TI-83+, or TI-84. If you use another calculator, I will not be able to assist you with its use, and you’ll be expected to learn how to use it entirely on your own. If you would prefer to avoid the cost of buying a calculator, you can rent one for the quarter from the Math Learning Center in SMT 355. You must have your own calculator for this course because sharing calculators on quizzes and exams is prohibited.

Class Format

We will use all of the following in this course: lectures, exams, online quizzes, and in-class activities. Students will also submit homework for grading.

Attendance is very important! Since there are no make-ups for missed work, your grade will be affected by absences. I expect you to be here and to be on time each day. Please make a decision today as to whether you can fulfill this obligation.

Work Outside Class

In my opinion, the most important part of this course is the work you do outside of class time. You don’t get stronger by watching someone else exercise, and you don’t get better at math by watching
someone else solve problems. To develop skill with mathematics, you have to struggle with it on your own.

I will assign homework for you to submit for grading, but these will only be a small portion of what I think you need to do to learn the material. I will also assign practice problems that you will not turn in; I strongly recommend you do all the assigned practice problems.

Study groups are strongly encouraged. Part of what I want you to learn in this course is how to communicate with mathematics effectively, in both written and verbal modes. Plan to meet with your group on a regular basis, and always prepare for those meetings by attempting the problems beforehand.

**Behavior (and Cell Phones, and MP3 players)**

Absolutely no cheating or plagiarism will be tolerated in this class. At the very least, a grade of zero will be given on the assignment. The consequences may be even more severe, at the instructor's discretion, up to and including a failing grade for the entire course.

Do not engage in any behavior that even makes the instructor suspect that you might be cheating, like glancing at another student's quiz, talking during an exam, having notes in view when they are not permitted, etc. The instructor may think you are cheating, but even if you are not, these would be unacceptable behaviors and subject to the same sanctions.

Respect of all others in this class is a necessity. Please refer to the GRCC Student Code of Conduct for rules governing appropriate behavior both inside and outside the classroom. Behavior that disrupts the class, or that is distracting to students or instructor, is not allowed. Such behavior will result in negative credit for the in-class activities component of the grade since it detracts from the learning environment. If disruptive behavior persists, the instructor may require students to change their seat or to leave the classroom.

If you are expecting a possible emergency phone call (e.g. due to a sick family member), inform me before class and make sure your cell phone is in silent mode. Otherwise, all cell phones must be turned off during class. Also, there should be no text-messaging during class, and you may not use your cell phone as a calculator.

MP3 players (such as IPODs and other devices) should be turned off during class. They may not be used at all during exams.

**ADA Statement**

If you believe you qualify for course adaptations or special accommodations under the Americans With Disabilities Act, it is your responsibility to contact the Disability Support Services Coordinator in the LSC and provide the appropriate documentation. If you have already documented a disability or other condition through the GRCC Disability Support Services Office, which would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone at 253-833-9111, x4506. Or, you can schedule an office appointment during my posted office hours or at another mutually determined time. If this location is not convenient for you, we will schedule an alternative place for the meeting. If you use an alternative medium for communicating, let me know well in advance of the meeting (at least one week) so that appropriate accommodations can be arranged.
INCLEMENT WEATHER, EMERGENCIES AND CLASS CANCELLATIONS

If an assignment or test is scheduled for a day when class is cancelled, students should expect the assignment or test to be due the next day that class actually meets. If classes are cancelled a day immediately or shortly before something is due, but not on the due date itself, students should expect the due date to remain unchanged. If classes are cancelled for several days before an assignment or test is due, the instructor reserves the right to make changes to due dates. Announcements of such changes will be made on the class web site and sent to your mail.greenriver.edu email.

If school is closed on the day of the final exam, I will use your average on the first two exams to give you a grade for the final. This way I will be able to assign grades so that you can enroll for next quarter. If you then wish to take the final to try to improve your grade, you can do so the first week of the next quarter. It is your responsibility to contact me if you wish to schedule such an exam.

EVALUATION

Exams: You will be given two midterm exams, plus a final exam. Each exam will be worth 20 percent of your grade, and the final will be worth 25 percent. There will be no make-up tests except for reasons of serious illness, religious reasons or issues of grave personal import, and any missed test will receive a grade of 0. I will require documentation (for example, a doctor’s note) before allowing a make-up. However, if you know that you will have a scheduling conflict with a test (or any assignment) in advance, notify me as soon as possible because sometimes arrangements can be made ahead of time. The final exam will be given in class on Thursday, December 10, from 11:00 a.m. to 1:00 p.m. The final exam will be comprehensive. You will be allowed to use one sheet (8”x11”, both sides) of your own handwritten notes during each exam.

Online Quizzes: There will be an online quiz each week, using the WAMAP online assessment system. You can access this web site from any computer with internet access. Once a quiz is made available, you will have one week to complete it. Quizzes will usually be made available after class on Fridays and will be due before class begins on the following Friday. Check the due dates online for the exact information for each quiz. The first quiz is available immediately and is due by 9:00 a.m. on Friday, September 25. Online quizzes will be worth a total of 15 percent of your grade.

Homework: Students will submit written homework solutions on Monday of each week (starting the second week). These problems will usually be involved – many of them will not resemble examples done in the textbook or in class, so students will be expected to think deeply to find solutions. Therefore, it is important to start your homework early each week. The homework will be graded for correctness as well as for clarity of the presentation. For example, a very well-written assignment that is clearly organized and carefully explained will earn more points than a sloppy assignment that is difficult to read and hard to follow. It is therefore recommended that students do scratch work to solve the problems before writing up careful solutions for submission. Written homework will count for 10 percent of the total grade for the course.

Activities: In-class activities will also count as 10 percent toward your grade. These are usually worksheets completed in groups. You must be in class to participate and there will be no way to make up any missed points. You can miss two in-class activities without penalty.
The breakdown of your grade by percentage is as shown in the table at right.

If you wish to take this class “Pass/No-Credit”, you must fill out a form at the Registrar’s Office. There is a deadline for doing this (see below). A “Pass” will be recorded on your transcript if you earned a grade of 1.5 or better. Decimal grades reported for this class will range from 4.0 to 0.0. A grade of “I” (incomplete) will only be given for emergency situations and only if at least 75% of the work has been completed with a projected passing grade. The minimum grades that will be assigned are as follow:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Decimal Grade</th>
<th>Percentage</th>
<th>Decimal Grade</th>
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</thead>
<tbody>
<tr>
<td>95</td>
<td>4.0</td>
<td>71</td>
<td>2.1</td>
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<tr>
<td>93</td>
<td>3.9</td>
<td>70</td>
<td>2.0</td>
</tr>
<tr>
<td>91</td>
<td>3.8</td>
<td>69</td>
<td>1.9</td>
</tr>
<tr>
<td>89</td>
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<td>56</td>
<td>0.6</td>
</tr>
<tr>
<td>74</td>
<td>2.4</td>
<td>55</td>
<td>0.5</td>
</tr>
<tr>
<td>73</td>
<td>2.3</td>
<td>Below 55</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Here is a list of registration deadlines for the current quarter:

<table>
<thead>
<tr>
<th>Registration Deadline</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal Without Grades Posted on Transcript</td>
<td>October 9</td>
</tr>
<tr>
<td>Pass/No-Credit Petition or Official Withdrawal</td>
<td>November 13</td>
</tr>
</tbody>
</table>

Understanding Decimal Grades

According to the 2006-2008 Green River Community College Catalog (p. 37), you can use the following chart to interpret your decimal grade as a letter grade:

- **A** -- 3.5 to 4.0
- **B** -- 2.5 to 3.4
- **C** -- 1.5 to 2.4
- **D** -- 1.0 to 1.4
- **F** -- 0.0 to 0.9

Assessment Outcomes

The following GRCC Assessment Outcomes are applicable in this course:
**Quantitative/Symbolic Reasoning:**
- Student evaluates and interprets information and data.
- Student recognizes which processes or methods are appropriate for solving a given problem, and correctly implements those processes.
- Student demonstrates the ability to estimate a solution to a presented problem.
- Student translates data into formats such as graphs, tables, formulas, and sentences.

**Critical Thinking:**
- Student provides reasons for the conclusions they reach and assess the relevance and adequacy of those reasons.
- Student connects past learning with current topics.

**LEARNING OBJECTIVES**

Students will demonstrate the ability to:
1. solve first order equations, including:
   a. separable equations
   b. exact equations and those made exact by integrating factors
   c. linear equations
2. solve higher order equations
   a. equations with one solution known
   b. homogeneous equations
   c. nonhomogeneous equations
3. apply the theory of differential equations to solve problems from different disciplines.
4. understand what the existence and uniqueness theorems say and apply them to first and second degree equations.
5. apply direction fields and numerical methods to solve differential equations.
6. solve problems in one or more of the following areas, at the discretion of the instructor:
   a. series solution
   b. systems of equations
   c. laplace transforms
   d. stability theory

**LATE PASSES**

Submit one of the “Late Passes” below to be given one extra week past the original due date for a homework assignment or online quiz. To use one of these passes, complete it and staple it to the front (top left corner) of the late homework assignment or hand it to the instructor at least one day in advance of completing the online quiz. These may not be used on exams or in-class activities. You may use at most two late passes total. You may not string together two Late Passes for a single assignment.

<table>
<thead>
<tr>
<th>Student Name:</th>
<th>Student Name:</th>
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</thead>
<tbody>
<tr>
<td>Circle One:</td>
<td>Circle One:</td>
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<tr>
<td>Online Quiz</td>
<td>Online Quiz</td>
</tr>
<tr>
<td>Homework</td>
<td>Homework</td>
</tr>
<tr>
<td>Original Due Date:</td>
<td>Original Due Date:</td>
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<tr>
<td>Changed Due Date:</td>
<td>Changed Due Date:</td>
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</tbody>
</table>